



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/511,188	02/23/2000	Kenji Shimoyama	000202	4217

23850 7590 07/05/2002

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW.
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

FLORES RUIZ, DELMA R

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 07/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/511,188

Applicant(s)

SHIMOYAMA ET AL.

Examiner

Delma R. Flores Ruiz

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

Figures 4 a, 4b, 4c, 5a, 5b, 5c are should be designated by a legend such as -- Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Fig. 4B, Character 407;

Fig. 5A, Characters 501, 502, 503 and 505; and

Fig. 5C, Characters 510 and 511.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 9 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Applicant is advised that should claim 9 be found allowable, claim 1 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 9 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

^{42-45, 48, and 51-53}
Claims 1 are rejected under 35 U.S.C. 102(e) as being anticipated by Hashimoto et al (6,387,721 B1).

Regarding claims 1, 42 – 45, 48, and 51 – 53, Hashimoto discloses a semiconductor optical device apparatus comprising: a substrate (Fig. 3 Character 21) ; a compound semiconductor layer containing an active layer (Fig. 3 Character 12); a protection film (Fig. 3 Character 31) having a stripe-shaped opening formed on the compound semiconductor layer; and a ridge type compound semiconductor layer having a smaller refractive index than the

refractive index of the active layer; the ridge type compound semiconductor layer being formed as to cover the stripe-shaped opening (Column 1, lines 41 – 50 and Column 5, lines 45 - 67), wherein the compound semiconductor layer, the protection film and ridge type compound semiconductor layer are formed on the substrate, and wherein the semiconductor optical device apparatus satisfies either ob both of the following conditions (a) and (b):

(A): a width (W_c) at an opening center of the stripe-shaped opening is different from a width (W_r) of the opening front end; and

(B): a width (W_c) at an opening center of the stripe-shaped opening is different from a width (W_r) of the opening rear end, (Column 6, lines 1- 20, Column 8, lines 50 – 67 and Column 9, lines 1 - 7). The protective film is formed on a ridge top and a side surface of the ridge type compound semiconductor layer (Fig. 3 Character 31, abstract, Column 1, lines 35 - 50). The contact film if formed to cover a ridge top and side surface of the ridge type compound semiconductor layer (Fig. 3 Character 41a, abstract, Column 6, lines 32 – 41). A crystal-grown plane of the substrate is plane or its crystallographically equivalent plane, and wherein a longitudinal direction of a stripe-shaped opening of the protection film is $[01 - 1]$ direction or its crystallographically equivalent direction (Column 9, lines 25 – 43). One layer among the clad layer having a refractive index smaller than that of the active layer formed below the active layer, the active layer, and the clad layer having the refractive index smaller than that of the active layer formed on the active layer is made of a compound represented by $(Al_x Ga_{1-x})_y$

In_{1-y}P (Column 7, lines 1 – 2). The semiconductor optical device apparatus is a semiconductor laser, semiconductor light-emitting device and semiconductor optical amplifier (abstract, and Column 1, lines 8 – 21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 – 41, 46 – 47, and 49 – 50 are rejected under 35 U.S.C. 103(a) as being obvious over Hashimoto et al (6,387,721 B1) in view of Adachi et al (5,523,256).

The applied reference has a common Inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37

CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claims 2 – 41 Hashimoto discloses the claimed invention except for the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \geq 0.2 \mu$ and a condition $IW_r - W_c \geq 0.2 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \geq 0.5 \mu$ and a condition $IW_r - W_c \geq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 0.5 \mu$ and a condition $IW_r - W_c \leq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 5 \mu$ and a condition $IW_r - W_c \leq 5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 3 \mu$ and a condition $IW_r - W_c \leq 3 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $IW_f - W_c \leq 2 \mu$ and a condition $IW_r - W_c \leq 2 \mu$, the semiconductor optical device apparatus satisfies a condition of $W_c \geq 2.2 \mu$ and $W_c \leq 50 \mu$, the semiconductor optical device apparatus

satisfies either or both of a conditions of $W_f \geq W_c$ and $W_r \geq W_c$, and $W_f = W_r$, the semiconductor optical device apparatus satisfies both of $W_f \leq 3 \mu$, 500μ and $W_r \geq 3 \mu$ and 500μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , 0.2μ , 0.1μ , and $W_r / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , μ , 0.2μ , 0.1μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f \leq W_c$ and $W_r \leq W_c$, and $W_f = W_r$, the semiconductor device apparatus satisfies both of $W_f \geq 0.5 \mu$ and $W_r \leq 0.5 \mu$, the semiconductor device apparatus satisfies both of $W_f \leq 0.5 \mu$ and $W_r \leq 10 \mu$, the semiconductor device apparatus satisfies both $W_f / W_c \geq 0.02$, 0.1 , and $W_r / W_c \geq 0.02$, 0.1 , the semiconductor device apparatus satisfies both $W_f / W_c \leq 0.85$, 0.7 , and $W_r / W_c \leq 0.85$, 0.7 and the semiconductor device optical apparatus satisfies either $W_f \geq W_c \geq W_r$ or $W_f \leq W_c \leq W_r$. The semiconductor layer containing the active layer includes a layer in which an In content of the compound crystal is 5% and 1% or higher, and wherein the In content of the compound crystal of the ridge type compound semiconductor laser is 10% or less.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \geq 0.2 \mu$ and a condition $|W_r - W_c| \geq 0.2 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \geq 0.5 \mu$ and a condition $|W_r - W_c| \geq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 0.5 \mu$ and a condition $|W_r - W_c| \leq 0.5 \mu$, the semiconductor optical device apparatus satisfies either or both of a

conditions of $|W_f - W_c| \leq 5 \mu$ and a condition $|W_r - W_c| \leq 5 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 3 \mu$ and a condition $|W_r - W_c| \leq 3 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $|W_f - W_c| \leq 2 \mu$ and a condition $|W_r - W_c| \leq 2 \mu$, the semiconductor optical device apparatus satisfies a condition of $W_c \geq 2.2 \mu$ and $W_c \leq 50 \mu$, the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f \geq W_c$ and $W_r \geq W_c$, and $W_f = W_r$, the semiconductor optical device apparatus satisfies both of $W_f \leq 3 \mu$, 500μ and $W_r \geq 3 \mu$ and 500μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , 0.2μ , 0.1μ , and $W_r / W_c \geq 1.2 \mu$, 1.5μ , 50μ , 10μ , μ , 0.2μ , 0.1μ , the semiconductor optical device apparatus satisfies either or both of a conditions of $W_f \leq W_c$ and $W_r \leq W_c$, and $W_f = W_r$, the semiconductor device apparatus satisfies both of $W_f \geq 0.5 \mu$ and $W_r \leq 0.5 \mu$, the semiconductor device apparatus satisfies both of $W_f \leq 0.5 \mu$ and $W_r \leq 10 \mu$, the semiconductor device apparatus satisfies both $W_f / W_c \geq 0.02$, 0.1 , and $W_r / W_c \geq 0.02$, 0.1 , the semiconductor device apparatus satisfies both $W_f / W_c \leq 0.85$, 0.7 , and $W_r / W_c \leq 0.85$, 0.7 and the semiconductor device optical apparatus satisfies either $W_f \geq W_c \geq W_r$ or $W_f \leq W_c \leq W_r$. The semiconductor layer containing the active layer includes a layer in which an In content of the compound crystal is 5% and 1% or higher, and wherein the In content of the compound crystal of the ridge type compound semiconductor laser is 10% or less, since it has been held that discovering an optimum


value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (703) 308-6238. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.


Delma R. Flores Ruiz
Examiner
Art Unit 2828


Paul Ip
Supervisor Patent Examiner
Art Unit 2828

DRFR/PI
June 18, 2002